Prathamesh C **Changde**

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Education

Central University of Karnataka — *Kalaburgi*
M.Sc in Physics — *August 2024 – Current*
CGPA: appearing

Savitribai Phule Pune University — *Pune*
B.Sc in Physics — *June 2020 – 2023*
CGPA: 8.63

Maharashtra State Board — *Warud, Amaravati*
12^{th} / HSC — *June 2019 – 2020*
Percentage: 68.46%

Central Board of Secondary Education — *Warud, Amaravati*
10^{th} / SSC — *June 2017 – 2018*
Percentage: 66.6%

Skills

Programing Skills: C, C++, Linux, Python
Typesetting: LaTeX
Simulations toolkits (novice): GEANT4, GRChombo & CosmoLattice
Computational Physics: Mathematica, SciLab, LabView
Python: GWpy, NumPy, SciPy, Matplotlib

Projects

Classification of Stars Based on Stellar Spectra — *self project*
Sept 2021
Personal endeavour to understand stellar evolution by analyzing absorption stellar spectra of known and unknown stars. Employed Python for data classification and Wein's Law for temperature calculation. Assigned spectral and luminosity classes using Morgan-Keenan system and plotted stars on HR diagram, exploring the relationship between spectral class and stellar properties
Project report availabe on Github

Shadows of Kerr black hole with and without scalar hair — *BSc Project*
May 2023
Worked on university project mandatory for bachelors degree to study black hole shadows, focusing on kerr black holes with scalar hair. Used ray-tracing to find hairy black hole shadows, showing smallar and exotic shapes compared to kerr black holes. Implications for EHT observations. Derived analytical Kerr solutions for ZAMO observer. Project Report available on Github

Bipolar Radio Antenna — *Winter Holiday project*
Dec 2024
Built a bipolar radio antenna to detect solar radio signals, using 18-gauge copper wire, coaxial cables, and an oscilloscope. Fabricated a fiber insulator with a 3D printer for structural precision. Conducted data acquisition and analysis, successfully identifying solar signals and environmental noise, enhancing understanding of radio signal behavior. The project report is available on my Github

Geant4 Deployment Script — *Self Project*
Feb-March 2025
Created a Python-based tool to automate the installation of Geant4, with smart configuration that adapts to the selected version. It takes care of dependencies, environment setup, and build options, making the whole process faster and easier. The script is designed to work across different systems, making it flexible and reliable. It's available on my Github for anyone to use or contribute to.

Conferences, Winter School and Seminar

PyaR (Physics and Research)
Attended online winter school of Python in Research by UC SANTA CRUZ — *Jan 2022*

Particle Identification in ePIC
Attended online seminar on particle indentification in ePIC with dRICH — *Aug 2024*

Physics Colloquium
Attented a talk on Generative-AI in teaching and learning of Physics in Central University of Karnataka — *Nov 2024*

High Energy Physics Seminar Series
Attended the Seminar series physics on unveiling new frontiers in High Energy Physics in Central University of Karnataka — *Aug-Nov 2024*

Lagoon Webinar Series
Learned about Representation Theory and Algebraic Geometry and their many interactions covering topics such as homological mirror symmetry, stability conditions, derived categories and other topics. — *From Jan 2025*

AI Winter School
Learned about various ways to use AI and ML in physics research by Brown University — *Jan 2025*

ISRO START-2025
Attended 26 days Online Lecture series in IIRS-ISRO Distance Learning Programme — *Jan 2025*

Quantum Revolution (QE aJAO-IQY2025) Workshop
Learned about Quantum Technologies such as Qiskit by Indian Assosition of Physics Teachers — *Feb 2025*

Certification Program on Python for Mathematical Solving
Learned about Uses of Python libraries to solve complex problems in Mathematics by IISHLS,Indus University — *Feb 2025*

Early Universe from Home 2025
Learned about ideas on, cosmological correlators, phase transitions, topological defects, primordial black holes and other early structure formation. — *Feb 2025*

Spring Conference 2025
Attended sessions on Solid State, Particle, Nuclear, and Astro/Cosmological Physics. Covered topics like Quantum Hall States, Higgs Mechanism, Gravitational Waves, Neutrinoless Double-Beta Decay, and 21-cm Cosmology. Organized by Ibrahim Mirza, PhD Physics Candidate, University of Tennessee. — *April 2025*

Summer Conference on High Energy Physics & Astrophysics 2025
Attended sessions on High Energy, Nuclear, and Astrophysics. Topics included Leptogenesis, Dark Matter, Supersymmetry, Solar Neutrinos, Modified Gravity, Cosmic Dawn, and Ultra-High-Energy Neutrino Detection. Organized by Ibrahim Mirza, PhD Physics Candidate, University of Tennessee. — *May 2025*

GW Open Data Workshop 2025
Participated in hands-on tutorials, quizzes, and a data challenge focused on gravitational-wave signal analysis using LIGO, Virgo, and KAGRA data. Learned to access open data, visualize waveforms, and apply matched filtering to detect binary black hole signals. Covered fundamentals of GW data recording and analysis. — *May 2025*

Quantum Computing Course – CDAC Hyderabad & IIT Roorkee
Completed a four-week intensive course covering qubit fundamentals, entanglement, teleportation, quantum gates, Boolean oracles, and quantum algorithms including Deutsch, Simon's, Grover's, HHL, and VQE. Gained hands-on experience with quantum simulators and an introduction to Quantum Machine Learning. — *May 2025*

3rd DAE-BRNS School on Very High Energy Astrophysics

Mount Abu, India

Oct 2025

Attended a four-day offline school on Very High Energy Astrophysics, gaining exposure to current research on Active Galactic Nuclei, Gamma-Ray Bursts, Cosmic Rays, and Multi-Messenger Astronomy. Acquired hands-on experience with the TACTIC telescope and developed a deeper understanding of gamma-ray detection using instruments such as HESS, MAGIC, VERITAS, CTA, and the MACE telescope at Hanle, Ladakh.